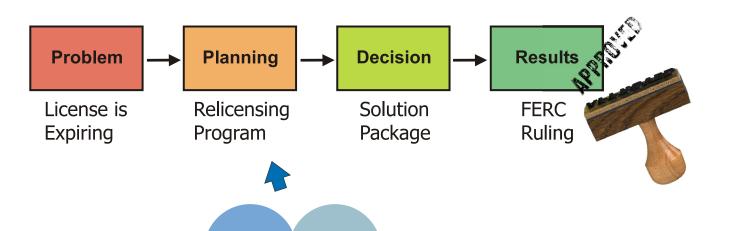
# **Operations Modeling Support – From Basics to Philosophy**



Work

Groups

"Model - n. A system of postulates, data, and inferences presented as a mathematical description of an entity or state of affairs" (Merriam-Webster's Collegiate Dictionary). Decision Results We use models to answer "What If" questions when formulating a solution to our problem in planning process, aiming at our desired outcomes.

## Philosophy of Modeling

"All models are wrong, but some are useful."

- George Box, Professor, U. of Wisconsin

"Entities should not be multiplied unnecessarily."

- William of Oceam, 14th century logician

"Make your theory as simple as possible, but no simpler."

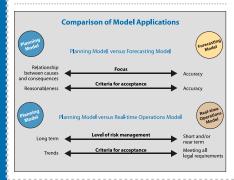
- Albert Einstein

"For every complex question there is a simple and wrong solution."

- Albert Einstein

## **Key to Success 1** Matching the Modeling Purposes

- · Operations models evaluate benefits and
- impacts of certain long-term measures. · The acceptance of the models should be evaluated based on the ability to provide a reasonable display of long-term risks associated with proposed measures.



## **Key to Success 2** Getting the Right Information

The real world is perfect; the modeling world cannot fully capture its complexity. Our goal is to minimize the impacts of modeling errors on decision making in Oroville Facilities Relicensing by:

**Plenary** 

Group

- · Minimizing potential system errors through reviews for modeling biases
- · Focusing on reasonableness and long-term trends for planning purposes
  • Inferring from relative changes between scenarios
- · Considering significance of relative changes in a real-world sense
- · Looking past unsupported model precision

NOT TO SCALE

## **Modeling Errors** System errors: Assumptions on how the system works Observation (measurement) errors: Data used to calibrate the model, built on the above assumptions, for its application Most of the time, both errors exist.

## **Key to Success 3**

Managing the Modeling Effort Collaboration among requestors, modeling coordinator,

Technical Teams

and modeling team members to accommodate more requests in a more effective and efficient manner.

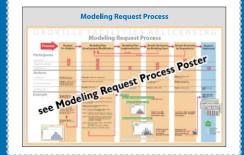
Responsibilities of the modeling coordinator (Curtis Creel, DWR) include:

### Prioritizing Among Requests:

Critical to relicensing program by factors including: completeness of the request, physical/legal/policy feasibility of proposed operational changes, work load of modeling team members

### Consolidating Requests by:

Finding common ground, using representative conditions.



### Operations Models for Oroville Facilities Relicensing Local Temperature **DONE** CALSIM II Operations Model Model ( Data Transfer Data Disaggregation Iteration Iteration Water supply conditions Monthly operations and water budget Targeted Power generation Hourly operations Reservoir temperature River/Diversion temperature Results Simulator Relative Operational Scale of Decision • Flow Requirements • Ramping Criteria • Power Generation Making Water Supply Allocations Intake Elevations Flow Requirements Responsible In-Basin Needs